

B(4)

B(4)

CO., LTD.

US version

Page 1 of 9

August 1, 2014

SDS: B(4) 0.01-2.38% (C)

SAFETY DATA SHEET

B(4) 0.01-2.38%

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: B(4) 0.01-2.38%

RECOMMEND USE: B(4)

MSDS PREPARED BY: Safety & Environment Control Section, B(4)

JAPAN

SUPPLIER: B(4) CO., LTD.

SECTION: Manufacturing Technology Division, Safety Control Section

ADDRESS: 150 Nakamaruko, Nakahara-ku, Kawasaki City, Kanagawa Prefecture 211-0012, JAPAN

TELEPHONE NUMBER: +81-44-435-3000

FAX NUMBER: +81-44-435-3020

EMERGENCY RESPONSE: +81-44-435-3001
+81-44-435-3002

USA

SUPPLIER: B(4) INC.

ADDRESS: 190 Topaz Street, Milpitas, California 95035, U.S.A.

TELEPHONE NUMBER: +1-408-956-9901

FAX NUMBER: +1-408-956-9995

EMERGENCY RESPONSE: +1-800-424-9300 (CHEMTREC for U.S.A.)
+1-703-527-3887 (CHEMTREC for international)

2. HAZARDS IDENTIFICATION

Emergency Overview:

GHS CATEGORY

Acute toxicity oral

Skin corrosion/irritation

Serious eye damage/eye irritation

Specific target organ systemic toxicity following single exposure

Specific target organ systemic toxicity following repeated exposure

Category

Category 4

Category 1A

Category 1

Category 1

Category 1

GHS LABEL ELEMENTS

Precautionary pictograms:



Signal word: Danger

Hazard Statement:

H302 Harmful if swallowed

H314 Causes severe skin burns and eye damage

H318 Causes serious eye damage

H370 Causes damage to organs (nervous system)

H372 Causes damage to organs (nervous system) through prolonged or repeated exposure

Precautionary Statements:

Prevention P260 Do not breathe dust/fume/gas/mist/vapours/spray.

P264 Wash hands thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P280 Wear protective gloves/protective clothing/eye protection/face

B(4)

B(4), LTD.

US version

Page 2 of 9

August 1, 2014

SDS: B(4) 0.01-2.38% (C)

protection.

Response P301+P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes.

Remove contact lenses if present and easy to do. continue rinsing.

P307+P311 IF exposed: Call a POISON CENTER or doctor/physician.

P310 Immediately call a POISON CENTER or doctor/physician.

P314 Get Medical advice/attention if you feel unwell.

P330 Rinse mouth.

P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

P363 Wash contaminated clothing before reuse.

Storage P405 Store locked up.

Disposal P501 Dispose of contents/container in accordance with all national and local regulations.

OSHA Regulatory State:

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Potential health effects:

Prolonged skin contact causes damage on the dermal tissue, for it contains basic substance.

Eye contact causes irritation. It also may cause burnt, damage on eyesight, or loss of eyesight.

Inhalation irritates trachea, lung, throat, or nose.

Irritating to mouth, throat, and stomach and may cause severe and permanent damage.

Potential environmental effects:

See Section 12: ECOLOGICAL INFORMATION

3. COMPOSITION / INFORMATION ON INGREDIENTS

SUBSTANCE/MIXTURE: Mixture

CHEMICAL NAME (GENERIC NAME): ----

SYNONYM (S): ----

INGREDIENT AND COMPOSITION:

INGREDIENTS	wt%	CHEMICAL FORMULA	CAS NO.
Tetramethyl ammonium hydroxide	<2.38	N(CH ₃) ₄ OH	75-59-2
Water	>97.62	H ₂ O	7732-18-5

4. FIRST AID MEASURES

First aid statements

First aid for exposure to eyes:

Rinse cautiously with water for 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

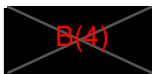
Rinse eye balls and eyelids thoroughly with water.

Check pH of the lacrimal fluid with litmus papers, if possible, and rinse eyes until the pH becomes normal (neutral).

Start rinsing as soon as possible to rinse away the material thoroughly, since delay of start of rinsing or insufficient rinsing of the exposed eyes may result in loss of sight.

Immediately take the patient to a physician for examination and treatment.

First aid for exposure to skin:



CO., LTD.

US version

Page 3 of 9

August 1, 2014

SDS:  0.01-2.38% (C)

Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

Rinse off the skin thoroughly and quickly as possible.

Delay of few seconds may increase injury.

First aid for inhalation:

Remove victim to fresh air and keep at rest in a position comfortable for breathing.

Loosen clothing and secure a clear respiratory airway.

Cover the body of the victim with blanket or the like to keep him/her warm and quiet.

If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.

Immediately take the patient to a physician for examination and treatment.

First aid for ingestion:

Do not induce vomiting.

(The risk increase by vomiting because it is corrosive)

If victim is conscious and alert, give 2-4 cupfuls of milk or water.

Never give anything by mouth to an unconscious person.

Immediately take the patient to a physician for examination and treatment.

Most important symptoms/effects, acute and delayed:

Prolonged skin contact causes damage on the dermal tissue, for it contains basic substance.

Eye contact causes irritation. It also may cause burnt, damage on eyesight, or loss of eyesight.

Inhalation irritates trachea, lung, throat, or nose.

Irritating to mouth, throat, and stomach and may cause severe and permanent damage.

Note to physicians

See Section 3: COMPOSITION / INFORMATION ON INGREDIENTS

5. FIRE FIGHTING MEASURES

Extinguishing media:

Proper extinguishing media should be used when fire breaks out in surroundings.

Specific hazards arising from the chemical:

Hazardous polymerisation does not occur.

It may decompose upon combustion or in high temperatures, forming carbon oxides, nitrogen oxides.

Fire fighting instructions:

Shut off fuel as much as possible.

Evacuate unnecessary personnel to safe area.

Foam should be effective for large fires.

When sprayed, water should be effective for cooling and protection of the fire fighters.

Protection of firefighters:

Fire fighters wear proper protective clothing and respiratory protection(SCBA).

Fight fire from protected location or safe distance.

Consider the use of unmanned hose holders or monitor nozzles.

Keep upwind of fire.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions:

Entry to non-involved personnel should be controlled around the leakage area by roping off, etc.

Evacuate the leeward personnel.

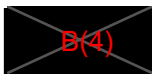
Ventilate the area.

Quickly shut off all ignition sources.

Equip extinguishers in case of ignition.

Wear proper protective clothings.

Do not touch any damaged container or spills without wearing appropriate protective equipment.




, LTD.

US version

Page 4 of 9

August 1, 2014

SDS:  0.01-2.38% (C)

Environmental precautions:

If safety allows, stop flow at the source.

Prevent spill solution from entering sewers, watercourses, rivers, or fields.

Methods and materials for containment and cleaning up:

Avoid routing of material to water bodies or streams.

Avoid discharge to drains and to the environment.

When the leak is small, take up spills into an empty container by adsorbing them to dry soil or sand/paper/clothes and neutralize the residual liquid.

When the leak is large, stop the flow with soil or the like and then, channel the flow to a safe place to take up them as much as possible into an empty container by piping them up or by adsorbing them to dry sand or the like.

Neutralize then the residual liquid with an acid (such as diluted hydrochloric acid or diluted sulfuric acid).

7. HANDLING AND STORAGE

Handling:

Use proper personal protective equipment as indicated in Section 8.

Wear appropriate protective goggles, rubber gloves, protective clothing.

Avoid overflowing, spilling or scattering the material since this is a toxic and corrosive material.

Work from windward.

Evacuate unnecessary personnel to safe area.

Do not breathe mist or spray.

Use a local exhaust to avoid inhalation if vapor or aerosol will be generated.

Seal the container after handling.

Avoid contact with oxidizing agents or reductants.

Relieve internal pressure before opening the container.

Once frozen, defrosting will not bring an even solution.

Solution should not remain in pipings when it is not used.

Water facility should be installed at every place where the solution is used.

It should facilitate measures in case of adhesion or contact with eyes.

Wash hands and face thoroughly after handling.

Install safety shower and eye bath.

Be careful in handling the container, and protect it from damages.

Do not bring contaminated protective tools, such as gloves, to the lounge.

Be careful of personal health after handling.

Storage:

Keep the container sealed, and store in a dark place.

It might freeze when temperature decreases.

Store locked up.

Store in a cool, dry, well-ventilated area away from incompatible substances.

Store away from incompatible materials such as oxidizing agents.

Use containers designated in the United Nations Regulations for Transport of Dangerous Goods.

Do not store or set together with acid, for this is basic.

OTHERS:

Follow all national and local regulations.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE GUIDELINES:

INGREDIENTS

Tetramethyl ammonium hydroxide

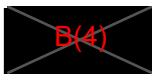
ACGIH TLV

None established

OSHA PEL

None established

Engineering controls:



, LTD.

US version

Page 5 of 9

August 1, 2014

SDS: B(4) 0.01-2.38% (C)

When handling, try to use closed apparatuses, equipment or partial ventilator.

Personal protective equipment (PPE):

Eye/face protection: Use chemical safety goggles and/or a full face shield where splashing is possible.

Skin protection: Wear appropriate protective clothing to minimize contact with skin. (Impervious protective clothing. Protective boots, Protective apron, etc)

Wear appropriate protective gloves (rubber gloves, alkali resistance)

Respiratory protection: Half or full facepiece respirator, self-contained breathing apparatus, supplied air respirator, etc.

Use respirators approved under appropriate government standards and follow local and national regulations.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Liquid
Color:	Colorless
Odor:	Characteristic odor
Odor threshold:	No data available
pH:	13.2 (2.38%aq)
Melting point/freezing point:	< 0°C
Initial boiling point and boiling range:	No data available
Flash point:	Non-combustible
Evaporation rate:	No data available
Flammability(solid, gas):	No data available
Upper/lower flammability or explosive limits:	No data available
Vapour pressure:	No data available
Vapour density:	No data available
Relative density:	1.00(25°C)
Solubility:	water Soluble.
Partition coefficient; n-octanol/water:	No data available
Auto-ignition temperature:	Non-combustible
Decomposition temperature:	No data available
Viscosity:	No data available

10. STABILITY AND REACTIVITY

Reactivity	No dangerous reaction known under conditions of normal use.
	Absorbs carbon dioxide from the air, and then degradation.
Possibility of hazardous reactions:	Polymerization will not occur.
Chemical stability:	Stable at normal temperatures and pressure.
Conditions to avoid:	Avoid overheat, flames, sparks and other sources of ignition.
Incompatible materials:	Acidic chemicals, oxidizing agents and reductants.
Hazardous decomposition products:	ammonia, oxides of nitrogen, alcohol, amines

11. TOXICOLOGICAL INFORMATION (Only data for each component is available.)

Tetramethyl ammonium hydroxide	
Acute toxicity (oral):	LD50: 34 50 mg/kg[rat]
Acute toxicity (dermal):	LD50: 112 mg/kg[rat]
Skin corrosion/irritation:	Corrosive [rabbit] Category 1
Serious eye damage/irritation:	Category 1
Respiratory sensitization :	No relevant information found.
Skin sensitization:	No relevant information found.

B(4)

B(4)

LTD.

US version

Page 6 of 9

August 1, 2014

SDS: B(4) 0.01-2.38% (C)

Germ cell mutagenicity:	No relevant information found.
Carcinogenicity:	
No carcinogenic effects were noted in OSHA, EPA, EU, NTP, IARC, and ACGIH.	
Reproductive toxicity:	No relevant information found.
STOST-single exposure:	Category 1 (nervous system)
STOST-repeated exposure:	Category 1 (nervous system)
Aspiration hazard:	No relevant information found.

12. ECOLOGICAL INFORMATION (Only data for each component is available.)

Tetramethyl ammonium hydroxide

Ecotoxicity	
Daphnia acute toxicity:	48hEC50: 3 mg/L[Daphnia magna]
Persistence and degradability:	Readily biodegradable
Bioaccumulative potential:	No relevant information found.
Mobility in soil :	No relevant information found.

13. DISPOSAL CONSIDERATIONS

RCRA Hazardous waste ID: #D002

First neutralize with acid, then treat it with activated sludge using common bacteria being cultivated for more than few weeks.

All excess material must be collected and transferred to a professional waste disposal company.

Carefully review information in - **7. HANDLING & STORAGE**.

Comply with all national and local regulations.

14. TRANSPORT INFORMATION

U.S. Department of Transportation (DOT):

PROPER SHIPPING NAME: Tetramethylammonium hydroxide, solution

HAZARD CLASS: 8 (Corrosives)

IDENTIFICATION NUMBER: UN1835

PACKING GROUP: III

Keep away from incompatibilities and all sources of ignition.

Follow all national and local regulations.

15. REGULATORY INFORMATION

<U.S. REGULATION>

TSCA (Toxic Substances Control Act):

Each individual component of the subject product is listed on TSCA Inventory of Existing Chemical Substances.

Section 4(e) - ITC Priority Testing List: Not regulated

Section 5(a)(2) - Chemicals with Significant New Use Rules (SNURs): Not regulated

Section 6 - Restricted Substances: Not regulated

Section 8(d) - Health and Safety Reporting: Not regulated

Section 12(b) - Export Notification: Not regulated

CERCLA (Comprehensive Environmental Response Compensation and Liability Act)

Hazardous Substances and Reportable Quantities: Not regulated

SARA Title III (Superfund Amendments and Reauthorization Act):

302 Extreme Hazardous Substances (EHS) : Not regulated

311/312 Hazard Categories:

Acute Health: Yes

Chronic Health: No

Fire: No

B(4)

B(4)

, LTD.

US version

Page 7 of 9

August 1, 2014

SDS: B(4) 0.01-2.38% (C)

Pressure: No

Reactive: No

313 Toxic Chemical (TC) : Not regulated

DEA (Drug Enforcement Administration) Not regulated

DHS (Department of Homeland Security) Not regulated

<STATE REGULATIONS>

CALIFORNI PROPOSITION 65: Not regulated.

16. OTHER INFORMATION

NFPA RATINGS:

HEALTH=3, FIRE=0, REACTIVITY=0(SCALE 0-4)

REFERENCE:

1. HSDB
2. RTECS
3. The Dictionary of Substance and Their Effects (The Royal Society of Chemistry)
4. Material Safety Data Sheet (of the raw material manufacturer)
5. Poisonous and Deleterious Substances Control Law: Applicable

CREATION DATE: August 1, 2014

REVISION DATE:

The information contained herein is based on current knowledge and experience; no responsibility is accepted that the information is sufficient or correct in all cases. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers and the protection of the environment.
